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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,506	10/05/2007	Masakazu Komatsu	0666.2940000	2138

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WASHINGTON, DC 20005

EXAMINER

KNUTSON, JACOB D

ART UNIT	PAPER NUMBER
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3611

MAIL DATE	DELIVERY MODE
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04/25/2012

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,506	Applicant(s) KOMATSU ET AL.	
	Examiner JACOB KNUTSON	Art Unit 3611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2012.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 13-18,20-27,29 and 30 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 13-18,20-27,29 and 30 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/13/12</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **13 – 18, 22 – 27, and 29 – 30 are** rejected under 35 U.S.C. 103(a) as being unpatentable over **Akashima et al. (US 2006/0048977 A1)** in view of **Omura et al. (US 4,628,768)** and **Stevens et al. (US 4,834,478)**.

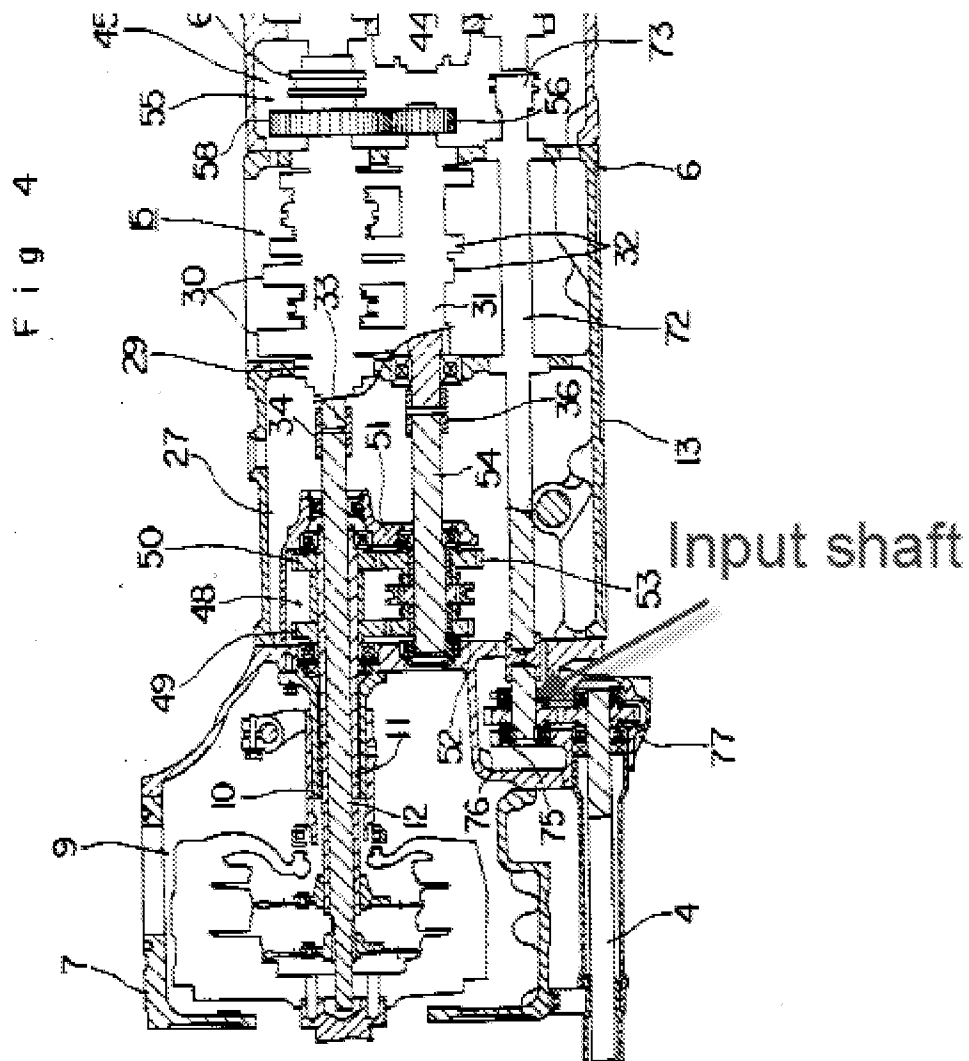
For claim **13**, Akashima et al. discloses a vehicle comprising wherein a transmission casing **12** is arranged in a rear portion of a vehicle body, a front axle casing **2** is arranged in the front portion of the vehicle body, and power from an engine **10** is transmitted from an output shaft **38** supported by the transmission casing through a power transmission shaft **24** to an input shaft **40** supported by the front axle casing, a gear casing **152** is disposed between the transmission casing and the front axle casing as shown in Fig. **20** and described in page **8**, paragraph **[0121]**, lines **6 – 9**, the gear casing is detachably attached (as shown in Fig. **44**) to a clutch housing **30** (the clutch is housed as shown in Fig. **8**) disposed before the transmission casing, and the input shaft of the front axle casing and an output shaft **150** (second transmission shaft) of the gear casing are arranged coaxially as shown in Fig. **10**, a crawler traveling unit (as shown in Fig. **1**) including: a drive sprocket **4**, an idler **6**, a track roller **7** provided between the drive sprocket and the idler, a crawler belt **9** wound around the drive sprocket, the idler and the

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track roller, and a shaft rotatably supporting the track roller as best shown in Fig. 7 but does not explicitly disclose the output shaft of the transmission casing and an input shaft of the gear casing are arranged coaxially, and the shaft is divided into parts that are connected to each other through an elastic member.

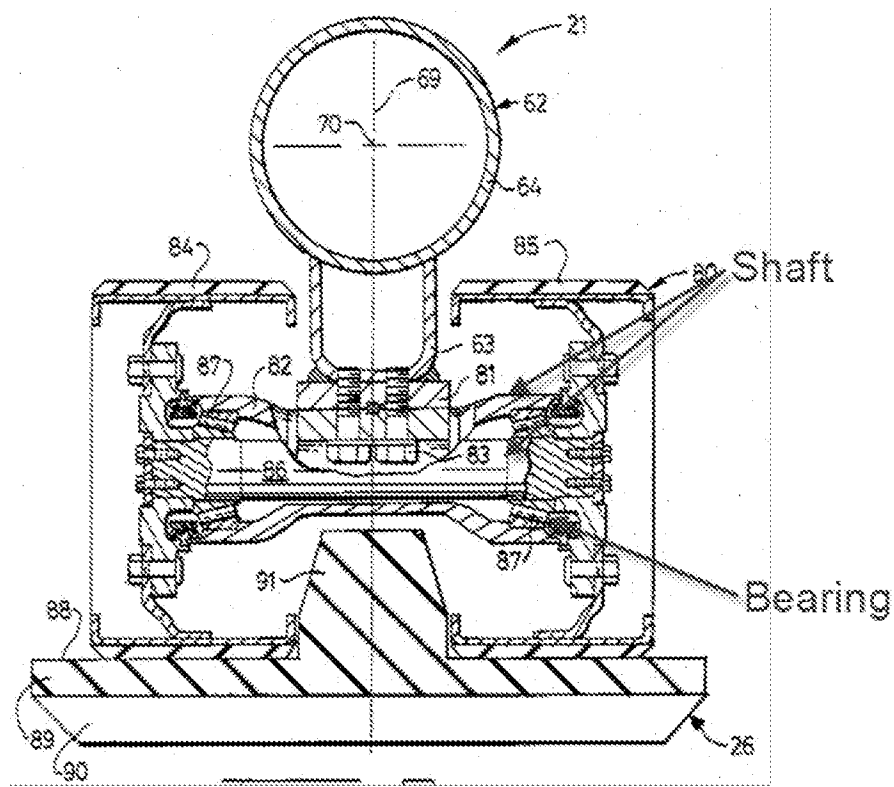
Omura et al. discloses an output shaft 72 of a transmission and an input shaft of a gear casing 77 arranged coaxially as shown in the Fig. above to allow for the low manufacturing costs while enabling back and forth movement at varied speeds, but does not explicitly disclose divided shaft comprising an elastic member.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to additionally use the input shaft of Omura et al. with the apparatus of Akashima et al. for the reasons set forth above.



Stevens et al. discloses a shaft, (a shaft 82, 86 comprising a casing 82 and a shaft 86) as shown below rotatably supporting a roller wheel 80 as shown in Fig. 1 which is divided into plural parts, wherein an elastic member 87 connects the shafts to allow for a stronger connection increasing the overall integrity and reducing overall maintenance costs.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to alternatively use the shaft of Stevens et al. with the apparatus of Akashima et al. modified as above for the reasons set forth above.



For claim **14**, Akashima et al. modified as above discloses a vehicle wherein a differential mechanism is disposed in the front portion of the vehicle and comprises: a differential **25** (forced differential mechanism) connecting left and right output shafts **3** (right and left axles), supported by the front axle casing, through a pair of planetary gear mechanisms **39**; a turning hydrostatic transmission **45** (hydraulic steering motor) giving difference of rotation speed on the output shafts through the planetary gear mechanisms so as to perform turning of the vehicle; and a mechanical turning transmission **41, 42, 46, 48** and **50** changing power from the turning hydrostatic transmission in speed and then transmitting the power to the differential.

For claim **15**, Akashima et al. modified as above discloses a vehicle wherein the mechanical turning transmission is a hydraulic-clutch type turning transmission.

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For claim **16**, Akashima et al. modified as above discloses a vehicle wherein the turning transmission is interlockingly connected to a sub transmission **23** disposed in the transmission casing.

For claim **17**, Akashima et al. modified as above discloses a vehicle wherein power from the engine mounted on the vehicle is transmitted to a hydraulic clutch type forward/rearward traveling switching device **21** and a main transmission, subsequently the power is transmitted to a sub transmission and changed in speed, and then traveling drive is performed, the turning hydrostatic transmission is actuated so as to control turning of the vehicle, and pressure oil is returned from the turning hydrostatic transmission through an oil cooler **179** to the transmission casing.

For claim **18**, Akashima et al. modified as above discloses a vehicle wherein power from the engine mounted on the vehicle is transmitted to a hydraulic clutch type forward/rearward traveling switching device **21** and the main transmission, subsequently the power is transmitted to the sub transmission and changed in speed, and then traveling drive is performed, the turning hydrostatic transmission is actuated so as to control turning of the vehicle, and pressure oil returning from the turning hydrostatic transmission is supplied through an oil cooler **179** to frictional boards of the hydraulic clutch of the forward/rearward traveling switching device.

For claim **20**, Akashima et al. modified as above discloses a vehicle wherein ends of the divided shafts are shaped so as to engage with each other.

For claim **21**, Akashima et al. modified as above discloses a vehicle wherein the ends of the divided shafts are shaped so as to mesh with each other.

For claim **22**, Akashima et al. discloses a vehicle comprising wherein a transmission casing **12** arranged in a rear portion of a vehicle body; a front axle casing **2** is arranged in the front portion of the vehicle body, wherein power from an engine **10** is transmitted from an output shaft **38** supported by the transmission casing through a power transmission shaft **24** to an input shaft **40** supported by the front axle casing, a gear casing **152** disposed between the transmission casing and the front axle casing as shown in Fig. **9** and described in page **8**, paragraph [0121], lines **6 – 9**, the output shaft of the transmission casing and an input shaft **148** of the gear casing are arranged on a same line and connected to each other, indirectly, as shown in Fig. **20**, and the input shaft of the front axle casing and an output shaft **150** (second transmission shaft) of the gear casing are arranged on a same line and connected to each other as shown in Fig. **10**, a crawler traveling unit (as shown in Fig. **1**) including: a drive sprocket **4**, an idler **6**, a track roller **7** provided between the drive sprocket and the idler, a crawler belt **9** wound around the drive sprocket, the idler and the track roller, and a shaft rotatably supporting the track roller as best shown in Fig. **7**, but does not explicitly disclose the gear casing being constructed integrally with a flywheel casing disposed behind an engine and the output shaft of the transmission casing, an input shaft of the gear casing are arranged coaxially, and the shaft is divided into parts that are connected to each other through an elastic member.

Omura et al. discloses an output shaft **72** of a transmission and an input shaft of a gear casing **77** arranged coaxially as shown in the Fig. above and further discloses a flywheel case **7** integrally constructed with the gear casing as shown in Fig. **4** to allow for the low manufacturing costs while enabling back and forth movement at varied speeds, but does not explicitly disclose the divided shaft comprising an elastic member.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to additionally use the input shaft and integral flywheel housing of Omura et al. with the apparatus of Akashima et al. for the reasons set forth above.

Stevens et al. discloses a shaft as shown above rotatably supporting a track roller 80 which is divided into plural parts, wherein an elastic member 87 connects the shafts to allow for a stronger connection increasing the overall integrity and reducing overall maintenance costs.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to alternatively use the shaft of Stevens et al. with the apparatus of Akashima et al. modified as above for the reasons set forth above.

For claim **23**, Akashima et al. modified as above discloses a vehicle wherein a differential mechanism disposed in the front portion of the vehicle comprises: a differential **25** (forced differential mechanism) connecting left and right output shafts **3** (right and left axles), supported by the front axle casing, through a pair of planetary gear mechanisms **39**; a turning hydrostatic transmission **45** (hydraulic steering motor) giving difference of rotation speed on the output shafts through the planetary gear mechanisms so as to perform turning of the vehicle; and a mechanical turning transmission **41, 42, 46, 48** and **50** changing power from the turning hydrostatic transmission in speed and then transmitting the power to the differential.

For claim **24**, Akashima et al. modified as above discloses a vehicle wherein the mechanical turning transmission is a hydraulic-clutch type turning transmission.

For claim **25**, Akashima et al. modified as above discloses a vehicle wherein the turning transmission is interlockingly connected to a sub transmission **23** disposed in the transmission casing.

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For claim **26**, Akashima et al. modified as above discloses a vehicle wherein power from the engine mounted on the vehicle is transmitted to a hydraulic clutch type forward/rearward traveling switching device **21** and the main transmission, subsequently the power is transmitted to a sub transmission and changed in speed, and then traveling drive is performed, the turning hydrostatic transmission is actuated so as to control turning of the vehicle, and pressure oil is returned from a turning hydrostatic transmission through an oil cooler **179** to the transmission casing.

For claim **27**, Akashima et al. modified as above discloses a vehicle wherein power from the engine mounted on vehicle is transmitted to a hydraulic clutch type forward/rearward traveling switching device **21** (hydraulic steering pump) and the main transmission, subsequently the power is transmitted to the sub transmission and changed in speed, and then traveling drive is performed, the turning hydrostatic transmission is actuated so as to control turning of the vehicle, and pressure oil returning from the turning hydrostatic transmission is supplied through an oil cooler **179** to frictional boards of the hydraulic clutch of the forward/rearward traveling switching device.

For claim **29**, Akashima et al. modified as above discloses a vehicle wherein ends of the divided shafts are shaped so as to engage with each other.

For claim **30**, Akashima et al. modified as above discloses a vehicle wherein the ends of the divided shafts are shaped so as to mesh with each other.

Response to Arguments

Applicant's arguments filed 3/13/12 have been fully considered but they are not persuasive. The applicant argues the cited prior art does not read on the limitation "elastic member" wherein the prior art does not recite the bearing is or can be elastic. However, a bearing has elasticity to some extent which reads on "an elastic member". Furthermore, the shaft 82, 86 comprising a casing 82 and a shaft 86 would allow for increased protection for the shaft from debris and such, resulting in increase in overall lifetime of the shaft and reducing overall maintenance costs.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Knutson whose telephone number is (571) 270-5576. The examiner can normally be reached on Monday to Friday, 12:30 PM - 9:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on 571-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.D.K/

April 10, 2012

/LESLEY D. MORRIS/

Supervisory Patent Examiner, Art Unit 3611